

Remarks

Claims 11 - 30 are pending. Favorable reconsideration is respectfully requested.

The present invention is directed to polymerizable mixtures used to prepare stable polymer films with high anisotropy. The polymerizable mixture comprises three components:

- (A) monomers or oligomers having two or more polymerizable (meth)acrylate, epoxy, or vinyl ether groups;
- (B) liquid crystalline monomers or oligomers having at least one mesogenic group with an aromatic double ring structure and only a single polymerizable group; and
- (C) less than 50% of a non-polymerizable monomer having at least one mesogenic group with an aromatic double ring structure.

By the use of this mixture, stable solid polymer films can be prepared which are homogenous and exhibit unusually high optical anisotropy. Such films are useful in quarter wave polarization filters, optical elements having reflective characteristics, and optical filters.

Claim 11 has been amended to ensure that it is interpreted in the manner intended, i.e. that the polymerizable mixture produce a stable polymer film when polymerized (specification page 4, lines 31 - 34), and to ensure that the term "a monomer (C)" is interpreted to mean "one or more monomers (C)". It is noted that in patent claims, the indefinite article "a" generally means "one or more" or "at least one" unless the specification clearly indicates the contrary. In this case, at page 13, lines 12 - 13, the specification clearly states that each of (A), (B), and (C), may be a single component or more than one of such components. This is not a narrowing amendment.

Claims 11 - 17 and 19 - 29 have been rejected under 35 U.S.C. § 102(b) as anticipated by Hikmet U.S. 5,762,823 ("*Hikmet*"). Applicants respectfully traverse this rejection.

Hikmet is directed to polymerizable mixtures which form lightly crosslinked liquid films containing liquid crystalline polymers, which are switchable by application of an electric field. No solid polymer films are disclosed. At column 2, last paragraph, for example, it is stated that if the amount of monomers with one polymerizable group is too large, the viscosity of the optically active layer becomes unacceptably high. In other words, all his compositions are liquids with a modest viscosity. Viscosity is only a fluid phenomenon and is undefined for solids. Moreover, high viscosities (which are at least ideologically closer to solids than are lower viscosity liquids) are taught against.

Moreover, the polymerizable composition of *Hikmet* is not the same as Applicants composition. *Hikmet*'s polymerizable mixture contains maximally 2 weight percent of monomers having two polymerizable groups (similar to Applicants' component (A)), maximally 30 weight percent of monomers having a single polymerizable group, the remainder being chiral or achiral non-polymerizable liquid crystalline molecules, thus minimally being 68 weight percent. At this high weight percentage of molecules with no polymerizable groups (these molecules being similar to Applicants' (C)), solid, stable films cannot be prepared. Moreover, Applicants' claims limit component (C) to less than 50 weight percent.

The Example referred to on pages 2 - 3 of the Office Action contains 75.3 weight percent of one non-reactive monomer. The composition also contains 4% of non-reactive chiral CB15, for a total non-reactive component content of 79.3%. The claims of the present application are limited to less than 50%. Thus, this Example does not anticipate.

With respect to claims 17 - 19, these claims require at least 5 weight percent of component (A), having two polymerizable groups. *Hikmet* limits his component having two polymerizable groups to not more than 2 weight percent. Thus, these claims are clearly not

anticipated for this further reason.

With respect to claims 24 - 25, due to the considerable differences in composition, by severely limiting the amounts of Applicants' components (A) and (B), and by using an enormous amount of Applicants' component (C), there is no reason to believe that the compositions of *Hikmet* would meet the additional claim limitations of claims 24 and 25.

In rejections based on inherency, the inherency must be certain, *Ex parte McQueen*, 123 USPQ 37 (POBA 1958), *Ex parte Cyba*, 155 USPQ 756 (POBA 1966); and must be a necessary result, and not merely a possible result. *Ex parte Keith*, 154 USPQ 320 (POBA 1966). Recent Federal Circuit cases have re-echoed these principles, requiring that missing descriptive material be "necessarily present" and not merely "probably" or "possibly" present, *In re Robertson*, 49 USPQ2d 1949 (Fed. Cir. 1999), and must meet a "strict identity test" for anticipation. *Trintec Industries, Inc. v. Top-U.S.A. Corporation*, 63 USPQ2d 1597 (Fed. Cir. 2002).

Here, there is no reason to suggest that any film meeting the limitations of claims 24 or 25 will be produced by any composition disclosed by *Hikmet*. It is noted that for anticipation based on inherency, as discussed earlier, the claimed result must occur 100% of the time, and may not be merely a possible or even a probable result.

Withdrawal of the rejection of the claims over *Hikmet* is solicited.

Claims 11 - 29 have been rejected under 35 U.S.C. § 102(b) over Coates et al. U.S. 6,218,578 ("*Coates*"). Applicants also respectfully traverse this rejection.

The compositions of *Coates* employ special reactive thiol compounds to limit molecular weight. This is believed to be necessary to achieve a crosslinked but still liquid system, as shown in Example 1, where the effect of curing temperature during photocuring is stated to alter the viscosity, the highest viscosities being achieved at the lowest temperature.


Since only fluids have viscosities, the clear implication is that the polymerizable mixtures of *Coates* do not form a stable polymer film.

Moreover, *Coates* does not disclose any mono-functional component (Applicants' component (B)) which contains an aromatic double ring structure. All the mono-functional compounds disclosed by *Coates* have only individual, separated aromatic rings. The composition of column 3(e) referred to by the Office does not anticipate, because neither the monomer or oligomer of group (b) [col. 2, lines 51 - 54] nor the chiral additive (e) are these specified to contain aromatic double ring structures as required by the subject invention claims. Withdrawal of the rejection of the claims over *Coates* is respectfully requested.

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,
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